

A synthesis of our knowledge about tadpole biology

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Roy W. McDIARMID & Ronald ALTIG (ed.). – *Tadpoles: the biology of anuran larvae*. Chicago & London, The University of Chicago Press, 1999: i-xiv + 1-444, 115 fig., 27 tables. ISBN 0-226-55762-6.

For a long time, the majority of studies in batrachology were focused on adult morphology or anatomy. Since the last mid-century the increase of our overall knowledge led the researchers to focus their investigations on new research fields or disciplines such as the study of advertisement calls of adult frogs, the study of tadpoles or of ecology and interactions of different species in a population or ecosystem. The numerous studies about tadpoles published during the last decades revealed an extraordinary diversity of forms, modes of development and adaptations to various habitats. All the data published until now, scattered in various periodicals, needed to be compiled in a single book providing a synthesis of available information concerning the biology of anuran larvae. Such a reference textbook should be useful both to the novice and to the confirmed professional. This aim was largely reached by the present book.

This collective book includes a general introduction dealing with the significance of tadpoles in the research world; a glossary which provides accurate redefinition for terms that were more or less currently employed, but whose meaning depended on the author or remained sometimes obscure; an abundant bibliography; an author index, a subject index and a taxonomic index which allow to find easily any theme treated in the book.

Between the introduction and the glossary, the multiple aspects of tadpole biology are divided in eleven chapters. All chapters (including the introduction) have a summary and some provide an exhaustive list of species with the reference to original publications relative to any precise topic. The first one is devoted to the materials and techniques, and review all the herpetologist needs for studying tadpoles, from the collect of these remarkable vertebrates to the scientific material necessary to study them through fixation methods, stage and ecomorphological determination. The four following chapters are relative to general organization of tadpoles. The first of them is devoted to the external morphology of tadpoles, with an emphasis on the oral apparatus morphology and a discussion about functional and evolutionary aspects of tadpole morphology. The last three chapters deal with tadpoles' internal organisation and gather together rare and scattered data about cranial and axial musculoskeleton, viscera and endocrines, and nervous and sensory systems.

An entire chapter is devoted to all cases of endotrophy in anurans (six among the 21 developmental guilds defined by ALTIG & JOHNSTON, 1989), certainly the most peculiar and captivating evolutionary mechanism in Anura.

The last part of this volume deals with the relations of anuran larvae with their environment throughout four chapters. The aspects of physiology of tadpoles treated are those relevant to their ecology, such as respiration, thermal relations, and ion and water balance. Two closely related chapters

gather information about intra- and interspecific relations, social behavior, the repartition of species in the multiple microhabitats available in a biotope, resource use and predation.

The problem of the maintenance and evolution of complex life cycles in anurans first developed by WASSERSUG (1974, 1975) is then discussed in the last but one chapter.

The twelfth and last chapter intends to show the diversity of anuran larvae and gives the most obvious characteristics (geographic range, ecomorphological guild and gross morphological features of oral disk, vent, spiracle, colour and pattern, snout-vent length, and finally authors of the information) for each family and each genus. An illustration is given for certain genera. This overall panorama is completed by a key which helps to find the identification of an unknown tadpole at the family or subfamily level.

The compilation work done by the different authors is considerable, the presentation is very meticulous and illustrations are of excellent quality. Inevitably some lacunae appear when attempts are made for providing exhaustive lists as for instance in tables 12.2 and 12.3 (chapter 12: 297-298), where a list of misidentified and undetermined tadpoles is given. However this kind of weakness is amply excusable in face of the amount of data to gathered. The systematics adopted by the authors in the chapter dealing with diversity mixes recent classificatory schemes (as for example recognizing the family Megophryidae) with older classifications (as the family Rhacophoridae and its three subfamilies Buergeriinae, Rhacophorinae and Mantellinae). I regret also the scarcity of data about the first stages of ontogeny. The only real criticism that I have to do to this book is the lack, in the literature surveyed and cited, of representatives of Asiatic species as well as the omission of several important Asiatic authors and of some of their very useful contributions to the knowledge of the Asiatic herpetology.

In conclusion, this book is very impressive by the amount of data gathered and by the work of the authors who succeeded in treating most aspects of larval anuran biology with clarity and pedagogy. This book establishes itself as a major work for all batrachologists and must have its place in your library beside the henceforth essential DUELLMAN & TRUEB (1985).

LITERATURE CITED

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